

WHAT IS CLAIMED IS

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1. 1. A rear projection system comprising:
2 a retractable rear-projection screen retractable from a deployed position to
3 a stowed position; and
4 a projector that projects light onto the retractable rear-projection screen.
 - 1 2. The system of claim 1, further including a folded light path between the
2 projector and the screen.
 - 1 3. The system of claim 2, wherein the projector projects light that is
2 polarized to fold a path of the light to the screen, to thereby form the folded light
3 path.
 - 1 4. The system of claim 1, wherein the retractable rear-projection screen is
2 folded into a first sheet, a second sheet and a third sheet when the screen is
3 extended, the first sheet, second sheet and third sheet being continuous.
 - 1 5. The system of claim 1, further comprising a continuous sheet retractable
2 into and extendable from the base, the continuous sheet being folded into a first
3 and second section to be operable with the retractable rear-projection screen when
4 the retractable rear-projection screen is extended.

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1 6. The system of claim 1, wherein the retractable rear-projection screen
2 includes a viewing screen, a first sheet and a second sheet, the viewing screen
3 being disposed for retraction into the base and for extension from the base, the
4 viewing screen being further disposed, when extended, to receive the light, at
5 least some of the light having been selectively reflected back and forth between
6 the first sheet and the second sheet.

1 7. An apparatus for projecting light to a viewing screen, the apparatus
2 comprising:
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4 353 a base;
5 a projector for projecting light;
6 a viewing screen connected to the base, the viewing screen having light-
7 detecting portions that provide to the projector feedback based on the projected
8 light; and
9 a roller connected to the base, for rolling and unrolling the screen.

1 8. The apparatus of claim 7, wherein the screen includes a first sheet that
2 selectively transmits and reflects the projected light based on a polarization state
3 of the projected light.

1 9. An apparatus comprising:
2 a base;
3 a viewing screen retractably connected to the base;
4 a projector for projecting light to the viewing screen;
5 a first sheet, connected to the base, the first sheet selectively transmitting
6 and reflecting the projected light based on a polarization state of the projected
7 light; and
8 a roller, connected to the base, operable to roll and unroll the first sheet.

1 10. The apparatus of claim 9, further comprising a second sheet, that reflects
2 the projected light, the roller further operable to roll and unroll the second sheet.

1 11. The apparatus of claim 10, wherein the viewing screen has light-detecting
2 portions that automatically provide the projector feedback based on the projected
3 light.

1 12. The apparatus of claim 10, wherein the roller is operable to roll and unroll
2 the viewing screen.

1 13. An apparatus comprising:
2 a number of concentric tracks that contain a plurality of corresponding
3 light-directing areas;

4 a plurality of readers disposed to read light from respective ones of the
5 light-directing areas; and
6 scanning devices for corresponding ones of the readers, the scanning
7 device operative to scan the light read by the corresponding reader as a scanline
8 screen image;
9 wherein a predetermined temporal phase relationship among the scanline
10 screen images is maintained as the scanline screen images are formed.

1 14. The apparatus of claim 13, wherein the readers transmit the read light
2 toward the center of the tracks.

1 15. The apparatus of claim 13, further comprising:
2 a base; and
3 a screen disposed for retraction into the base and for extension from the
4 base;
5 wherein the scanline screen images are formed on the screen.

1 16. The apparatus of claim 13, wherein the tracks revolve and at least one of
2 the scanline screen images is formed from the number of revolutions equal to the
3 number of tracks.

1 17. The apparatus of claim 13, wherein at least one of the readers includes
2 electro-optical means to switch between reading the innermost track and the
3 outermost track.

1 18. The apparatus of claim 13, wherein at least one of the readers includes:
2 a plurality of first devices that selectively transmit and reflect light based
3 on a polarization state of the light; and
4 a plurality of second devices interposed between the first devices, the
5 second devices being selectively operable to preserve, or to change, the
6 polarization state of light.

1 19. An apparatus comprising:
2 a plurality of concentric tracks that contain a plurality of corresponding
3 holographic gratings;
4 a plurality of light sources disposed to transmit light to respective ones of
5 the holographic gratings, so that spinning of the tracks causes the light from at
6 least two of the light sources to sweep in unison, across a predefined angular
7 range, to form a scanline screen image, and so that further spinning of the tracks
8 causes at least one other scanline screen image to be formed; and
9 an orthogonal scanner for scanning the scanline screen images so that they
10 are disposed generally parallel.

1 20. The apparatus of claim 19, further comprising:
2 a base; and
3 a screen disposed for retraction into the base and for extension from the
4 base;
5 wherein the scanline screen images are formed on the screen.

1 21. The apparatus of claim 19, wherein the sweeps in unison of the at least
2 two light sources overlap to form a single scanline screen image, so that further
3 spinning of the tracks causes at least one other scanline screen image to be
4 formed.

1 22. A portable, hand-held unit with retractable displaying facilities, the unit
2 comprising:
3 an image information memory;
4 a rear-projection viewing screen extendible from and retractable into the
5 unit;
6 an image formation module in communicative connection with the image
7 information memory and the viewing screen; and
8 means for extending and retracting the viewing screen.

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1 23. The unit of claim 22, further comprising a projection sheet that includes
2 the rear-projection viewing screen, the projection sheet being folded into a
3 plurality of sections when the rear-projection viewing screen is extended.

1 24. The unit of claim 22, wherein the viewing screen extends so that a first
2 sheet is interposed between the viewing screen and a second sheet, the first sheet
3 selectively transmitting and reflecting light from the image formation module, the
4 second sheet reflecting the light from the image formation module.

1 25. The unit of claim 24, wherein the extending and retracting means includes
2 a roller, and wherein the viewing screen, first sheet and second sheet are
3 continuously connected to form a projection sheet that rolls onto the roller to
4 retract the viewing screen and unrolls from the roller to extend the viewing
5 screen.

1 26. A method of selectively providing facilities to rear-project light, the
2 method comprising the steps of:
3 disposing both a first sheet and a second sheet for retraction into a base
4 and extension from the base;
5 further disposing the first sheet and second sheet to reflect light back and
6 forth to each other when the first sheet and the second sheet are extended; and

7 selectively reflecting light from, and transmitting light through, the first
8 sheet to a viewing screen.

1 27. A method of selectively providing facilities to rear-project light, the
2 method comprising the steps of:
3 providing indexing portions to a viewing screen;
4 providing a base with means for rolling and unrolling the viewing screen;
5 and
6 projecting light to at least some of the indexing portions;
7 providing means for updating the projection of the light; and
8 routing feedback from the at least some indexing portions to the updating
9 means.

1 28. A method of selectively providing facilities to rear-project light, the
2 method comprising the steps of:
3 providing a base with means for rolling and unrolling a viewing screen;
4 projecting light; and
5 selectively transmitting and reflecting the projected light based on a
6 polarization state of the projected light, the transmitted light being transmitted to
7 the viewing screen.

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- 1 29. A method of selectively providing facilities to rear-project light, the
2 method comprising the steps of:
3 providing a base with means for extending and retracting a viewing
4 screen;
5 arranging holographic gratings in concentric circular tracks;
6 spinning the concentric circular tracks axially; and
7 projecting a predetermined number of light beams through the spinning
8 tracks to create a corresponding number of scanline screen images among which a
9 predetermined temporal phase relationship is maintained, the scanline screen
10 images being formed on the viewing screen.
- 1 30. A method of selectively providing facilities to rear-project light, the
2 method comprising the steps of:
3 providing a base with means for extending and retracting a viewing
4 screen;
5 arranging holographic gratings in concentric circular tracks;
6 spinning the concentric circular tracks axially;
7 projecting at least two light beams through the spinning tracks to cause the
8 at least two light beams to sweep in unison, across a predefined angular range, to
9 form a scanline screen image, and so that further spinning of the disk causes at
10 least one other scanline screen image to be formed; and

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- 11 scanning the scanline screen images so that they are generally parallel on
- 12 the viewing screen.

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